Exponentials and Logs as Inverses

Name: _____

Find the inverse of the following expressions.

1) $y = \log_7(x)$

2) $y = 5^x$

3) $y = \log(x)$

4) $y = e^x$

5) $f(x) = 4^{2x-5} - 3$

6) $g(x) = 2\ln(x+3)$

7) $h(x) = \frac{\log_{12}(3x)}{5}$

8) Use composition to prove the functions in question 5 are inverses.

9) Use composition to prove the functions in question 6 are inverses.

10) What transformation would cause the graph of $y = 3^x$ to have a range of (5, ∞)? Write the transformation in words and as an equation.

11) What transformation would cause the graph of $y = 2^x$ to have a y-intercept of (0, 8)? List three different ways this could happen.

12) What type of transformation could cause the graph of y = ln(x) to have a y-intercept? Give an example of a natural log function with a y-intercept.

13) What type of transformation would cause the graph of $y = \log_9(x)$ to have a domain of (-10, ∞)?

14) What type of transformation would cause the graph of an exponential to have the end behavior below?

$$\begin{cases} \text{As x} \to \infty, \text{f(x)} \to 0 \\ \text{As x} \to -\infty, \text{f(x)} \to \infty \end{cases}$$

15) Algebraically, how do you find the x-intercept of a logarithmic equation? Find the x-intercept of $y = \log_3(2x - 5) - 10$.